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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/982,857	10/22/2001	Ivar I. Primdahl	P/772-304	7692
24998	7590	12/16/2004	EXAMINER	
DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP			KERNS, KEVIN P	
2101 L Street, NW			ART UNIT	
Washington, DC 20037			PAPER NUMBER	
			1725	

DATE MAILED: 12/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/982,857

Applicant(s)

PRIMDAHL, IVAR I.

Examiner

Kevin P. Kerns

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2004 and 07 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claim 4 is objected to because of the following informalities: in the 4th line of the claim, "a" should be deleted before "parallel". Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boucot et al. (US 5,632,787) in view of Verrill et al. (US 5,938,800).

Boucot et al. disclose a process and autothermal reforming device for manufacturing synthesis gas, in which the process and device include combusting a mixture of hydrocarbon and steam with oxygen in a combustion chamber; withdrawing the combustion product through a duct leading to a reforming reactor with a catalytic bed 4; and catalytically reforming the combustion product to produce a reformat to be withdrawn from one or several outlets 8 at the bottom of the catalytic bed 4 (abstract; column 2; lines 24-57; column 3, lines 5-43; column 7, lines 59-67; column 8, lines 1-9; and Figures 1 and 2). Boucot et al. do not disclose the use of at least two catalytic reactors connected in parallel to the combustion chamber.

However, Verrill et al. disclose a compact multi-fuel steam reformer and process for using the reformer, in which the reformer and process include combusting a mixture of hydrocarbon and steam with flue gases (including air) in a combustion chamber; withdrawing the combustion product through a duct leading to a reforming reactor with a catalytic bed, in which the reforming reactor is divided into two reforming sections (420,430) via dividing plate 450, being connected in parallel to the combustion chamber (burner 220); and catalytically reforming the combustion product to produce a reformat to be withdrawn from outlets at the bottom of the catalytic bed reactor that includes the two reforming sections (420,430), such that the two reforming sections are advantageous for providing a compact and mobile design while producing useful quantities of hydrogen from a variety of fuels (abstract; column 3, lines 12-60; column 4, line 25 through column 8, line 43; and Figures 1-4).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the process and autothermal reforming device for manufacturing synthesis gas, as disclosed by Boucot et al., by using at least two catalytic reactors connected in parallel to the combustion chamber, as taught by Verrill et al., in order to provide a compact and mobile design while producing useful quantities of hydrogen from a variety of fuels (Verrill et al.; column 3, lines 15-35; and column 8, lines 20-43).

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4. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boucot et al. (US 5,632,787) in view of Verrill et al. (US 5,938,800) as applied to claim 1 above, and further in view of Koyama et al. (US 4,935,037).

Boucot et al. (in view of Verrill et al.) disclose and/or suggest the elements of claim 1 above. Neither Boucot et al. nor Verrill et al. specifically discloses the burner arranged below the combustion chamber, as well as outlet means in the top of the combustion chamber.

However, Koyama et al. disclose a fuel reforming process and apparatus that includes a combustion chamber (burner/combustor 15 in the bottom of the chamber and having outlet means communicating with a duct), which is fed by fuel tube 19 (hydrocarbon + steam) and air supply tube 18, or raw fuel supply tube 25 (methane + steam) to produce a combustion product; a catalytic reactor (region packed with reforming catalyst 6); a duct that connects the combustor to the catalytic region; and withdrawal ducts for the reformat products, such that the burner arranged below the combustion chamber and outlet means in the top of the combustion chamber are advantageous for obtaining a compact design that makes effective use of the quantity of heat of a combustion gas, such that a reforming reaction is promoted within the apparatus (abstract; column 1, lines 44-68; column 2, lines 1-23; column 3, line 1 through column 4, line 46; column 5, lines 6-68; column 6, lines 1-35 and 62-68; column 7, lines 1-43; and Figures 1-8).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the process and autothermal reforming device

for manufacturing synthesis gas, as disclosed by Boucot et al., by using at least two catalytic reactors connected in parallel to the combustion chamber, as taught by Verrill et al., in order to provide a compact and mobile design while producing useful quantities of hydrogen from a variety of fuels, and by further using the burner arranged below the combustion chamber, as well as outlet means in the top of the combustion chamber, as disclosed by Koyama et al., in order to obtain a compact design that makes effective use of the quantity of heat of a combustion gas, such that a reforming reaction is promoted within the apparatus (Koyama et al.; column 1, lines 44-62).

Response to Arguments

5. The examiner acknowledges the applicant's formal drawings and amendment, received by the USPTO on August 16, 2004 and October 7, 2004, respectively. The formal drawings are approved by the examiner, and overcome the prior objections to the drawings. The applicant's amendment overcomes the prior objections to the abstract and specification. However, a new objection to claim 4 has been raised by the applicant's amendment (see paragraph 1 above). Claims 1-4 remain under consideration in the application.

6. Applicant's arguments with respect to claims 1-4 have been considered but are moot in view of the new ground(s) of rejection.

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Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kevin P. Kerns whose telephone number is (571) 272-1178. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin P. Kerns *Kevin Kerns 12/11/04*
Examiner
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KPK
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December 11, 2004